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Persistent Pulmonary Dysfunction Following Specific Lower Respiratory Diseases During Childhood. Grant #647R2

Beginning with the working hypothesis that specific lower respiratory diseases during childhood produce pulmonary injury which can be measured during the acute illness and can be shown to persist even after a complete clinical recovery, this 5-year study is designed for children who experience such acute, severe lower respiratory disease and proposes to show:

A. The acute effects of these diseases upon their pulmonary airway mechanics and ventilation/perfusion relationships.

B. The bacterial and viral pathogens associated with these diseases.

C. The persistence of this pulmonary dysfunction after a complete clinical recovery.

During the first year of this study, over 50 children, four years or younger and without previous history of major respiratory disease, will be selected at random from the hospital admissions. Detailed histories, physical examinations, and chest x-rays will be used to establish clinical diagnosis and estimate the severity of disease. Clinical studies to be employed include viral and bacteriological isolation prior to therapy; arterial blood pH, pCO_2, and pO_2; and urinary nitrogen tension measurements during the acute and convalescent phase of the illness. Clinical and physiological surveillance will be maintained at specific intervals, both before and after discharge from the hospital, until complete physiological recovery criteria are met.

A control group of children admitted for essentially non-respiratory disease will be matched to the study group by age, sex, race or ethnic origin, height, weight, family composition and past history of good health. Their physiological measurements should document the validity of our established normal pulmonary function standards.

Current Grant Level: $22,000.

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